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Tyler J Gonzales*, Department of Mathematics, Hibbard Humanities Hall 508, 124 Garfield Avenue, Eau Claire, WI 54701. *Extensions of M -matrix Theory to Rectangular M -matrices.*

We study (square) M -matrices and generalizations of such matrices. M -matrices are important in many mathematical applications including biology, economics, and probability theory. M -matrices have been very extensively studied and there are more than fifty characterizations for a matrix to be an M -matrix. There are a number of generalizations of this notion including a study on what are called rectangular M -matrices. The objective of this project is to revisit the notion of rectangular M -matrices, by giving a better definition to it, as well as to study the extent to which some of the properties of square M -matrices could be generalized to this modified concept of rectangular M -matrices. (Received September 11, 2019)